10th Class 2020		
Biology	Group-II	Paper-II
Time: 1.45 Hours	(Subjective Type)	Max. Marks: 48

(Part-I)

2. Write short answers to any FIVE (5) questions: (10)

(i) Define homeostasis and give one example.

Ans Homeostasis may be defined as "The maintenance of the internal conditions of body at equilibrium, despite changes in the external environment." For example, the core temperature of human body remains at about 37°C despite fluctuations in the surrounding air temperature.

(ii) What is bronchitis? Write the name of its two types.

Ans Bronchitis is the inflammation of the bronchi or bronchioles. It results in excessive secretions of mucus into the tubes, leading to the swelling of tubular walls and narrowing of tubes. It is caused by viruses, bacteria or exposure to chemical irritants (*e.g.*, tobacco smoke). There are two major types of bronchitis *i.e.*, acute and chronic.

(iii) What is meant by stomata? Write their function.

Ans The leaves and young stems have stomata in their epidermis. The gaseous exchange occurs through these stomata.

(iv) What are succulent organs? Give example.

Ans Some xerophytes have special parenchyma cells in stems or roots in which they store large quantities of water. This makes their stems or roots wet and juicy, called succulent organs.

Example:

Cactus is the common example of such plants.

(v) Define nephron and write name of its two main parts.

Ans The functional unit of the kidneys is called nephron. There are over one million nephrons in each kidney. There

are two parts of a nephron *i.e.*, renal corpuscle and renal tubule.

(vi) Differentiate between aqueous humour and vitreous humour.

Ans The iris divides the cavity of eye into two chambers. The anterior chamber is in front of iris *i.e.*, between cornea and iris; whereas the posterior chamber is between iris and retina. The anterior chamber contains a clear fluid known as ***aqueous humour*** while the posterior chamber contains a jelly-like fluid known as ***vitreous humour***.

(vii) What is meant by tapetum?

Ans Tapetum is a layer behind the eye, which is capable of reflecting the light. The eyes of cat and dog shine in the night because of the presence of tapetum behind the eye.

(viii) Define reflex arc.

Ans Reflex arc is the nerve pathway over which the nerve impulses travel in a reflex action.

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3. Write short answers to any FIVE (5) questions: (10)

(i) What are hinge joints? Give its one example.

Ans Hinge joints are the type of moveable joints. They move back and forth like the hinge on a door and allow movement in one plane only. The knee and elbow are hinge joints.

(ii) Differentiate between tendons and ligaments.

Ans Tendons are tough bands and attach muscles to bones. When a muscle tendons exerts a pulling force on the attached bone, it moves as a result. Whereas ligaments are strong but flexible bands and join one bone to another at joints. They prevent dislocation of bones at joint.

(iii) How does honeybee reproduce?

Ans Queen honeybee lays eggs in the cells of honeycomb. Many eggs remain unfertilized and develop into haploid males (drones) by parthenogenesis. At the same

time, some eggs are fertilized by male bees and these develop into diploid females (new queen and worker bees).

(iv) What is meant by alternation of generations?

Ans The phenomenon in which two different generations alternate with each other during life cycle is known as alternation of generations.

(v) Differentiate between genotype and phenotype.

Ans The specific combination of genes in an individual is known as genotype, while the expression of genotype in the form of trait (in our example, being albino or having normal pigmentation) is known as the phenotype.

(vi) What is incomplete dominance? Give an example.

Ans Incomplete dominance is the situation where, in heterozygous genotypes, both the alleles express as a blend (mixture) and neither allele is dominant over the other. As a result of this blending, an intermediate phenotype is expressed. Following is the familiar example of incomplete dominance:

In Four o'clock plants, the 3 flower colours are red, pink and white. There is no specific gene responsible for producing pink flowers.

(vii) What are homologous chromosomes?

Ans The body cells have a constant number of paired chromosomes. The two chromosomes of a pair are known as homologous chromosomes. In humans body cells, there are 23 pairs of homologous chromosomes for a total of 46 chromosomes.

(viii) Define DNA replication.

Ans Before a cell divides, its DNA is replicated (duplicated). It is done to make the copies of the chromatids of chromosomes. During replication, the DNA double helix is unwound and the two strands are separated, much like the two sides of a zipper. Each strand acts as a template to produce another strand.

4. Write short answers to any FIVE (5) questions: (10)

(i) What are decomposers?

Ans Decomposers mean organisms which decompose the dead bodies and dead matter. Many types of bacteria and fungi are the principal decomposers of biosphere.

(ii) What is denitrification?

Ans It is a biological process, in which nitrates and nitrites are reduced to nitrogen gas by denitrifying bacteria. By this process, nitrogen is return to atmosphere.

(iii) Define parasitism.

Ans It is a type of symbiosis (between members of different species), in which smaller partner (parasite) derives food and shelter from the body of larger partner (host) and, in turn, harms it.

(iv) Define eutrophication.

Ans Enrichment of water with inorganic nutrient (nitrates and phosphates) is called eutrophication.

(v) Write the function of hormone thymosin.

Ans The hormone thymosin may prove effective against brain and lung cancer.

(vi) What is the meaning of fermentation in biotechnology?

Ans In biotechnology, the term "fermentation" means the production of any product by the mass culture of micro-organisms.

(vii) What are addictive drugs?

Ans Some drugs often make person dependent on them, or addicted. These may be called as addictive drugs. By using such drug, the person's body becomes familiar to it and the user cannot function well without it.

(viii) Define antigens and antibodies.

Ans Pathogens contain special proteins called "antigens". When pathogens enter the body (blood) of

host, these proteins stimulate the immune response in host *i.e.*, synthesis of "antibodies". Antibodies bind to pathogens and destroy them.

(Part-II)

NOTE: Attempt any TWO (2) questions.

Q.5.(a) Explain two methods of dialysis in detail. (4)

Ans For Answer see Paper 2019 (Group-II), Q.5.(a).

(b) Write a note on pancreas. (5)

Ans **Pancreas:**

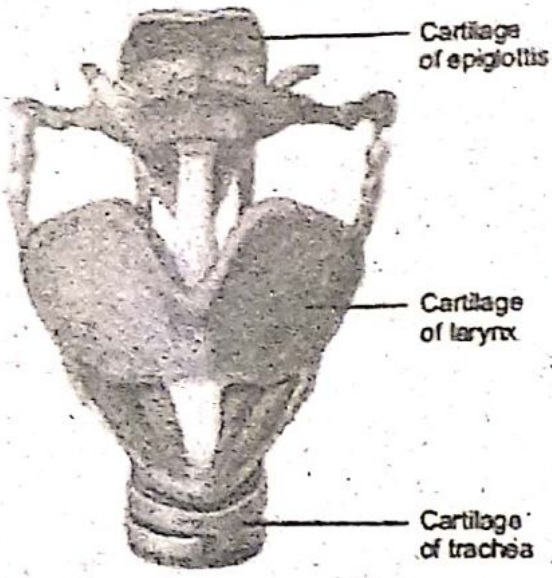
This organ has two functions. The major part of pancreas is a ducted (exocrine) gland. This portion secretes digestive enzymes, through a duct, into the small intestine. Some portions of pancreas serve as ductless (endocrine) gland. This portion contains groups of endocrine cells referred to as islets of Langerhans. These islets secrete two hormones *i.e.*, insulin and glucagon. Glucagon influences the liver to release glucose in blood and so the blood glucose concentration rises. Insulin influences the liver to take excess glucose from blood and so the blood glucose concentration falls.

If a person's pancreas does not make normal quantity of insulin, the blood glucose concentration rises and we say that the person has diabetes mellitus. Persons with diabetes have loss of body weight, weakening of muscles and tiredness. The disease can be controlled by insulin administration. Formerly, insulin extracted from animals was used for this purpose. But now human insulin produced from bacteria through genetic engineering is available.

Q.6.(a) Define cartilage and write its various types. (4)

Ans **Cartilage:**

Cartilage is a dense, clear blue-white firm connective tissue (but less strong than bone). The cells of cartilage are called chondrocytes. Each chondrocyte lies in a fluid space called lacuna present in the matrix of cartilage. The matrix of cartilage contain also collagen fibres. Blood vessels do not enter cartilage. There are three types of cartilage:



1. Hyaline Cartilage:

Hyaline cartilage is strong yet flexible. It is found covering the ends of the long bones, in the nose, larynx, trachea and bronchial tubes.

2. Elastic Cartilage:

Elastic cartilage is similar in structure to hyaline cartilage. It is also quite strong but has elasticity due to a network of elastic fibres in addition to collagen fibres. It is found in epiglottis, pinna, etc.

3. Fibrous Cartilage:

Fibrous cartilage is very tough and less flexible due to large number of thick collagen fibres present in knitted form. It is found in intervertebral discs.

(b) Discuss any five methods of natural vegetative propagation. (5)

Ans For Answer see Paper 2017 (Group-I), Q.6.(b).

Q.7.(a) Explain basic steps in genetic engineering. (4)

Ans For Answer see Paper 2019 (Group-I), Q.7.(b).

(b) What is meant by antibiotic resistance? (5)

Ans **Antibiotic Resistance:**

Antibiotics are extremely important in medicine, but unfortunately bacteria are capable of developing resistance to them. Such bacteria are not affected by commonly used antibiotics.

Bacteria have number of ways of developing resistance. Sometimes, their internal mechanism stops the working of antibiotic. Bacteria can also transfer the genes responsible for antibiotic resistance between them. So such resistant bacteria make it possible for other bacteria to acquire resistance. Another reason for increasing antibiotic resistance in bacteria is their use in diseases in which they have no efficacy (*e.g.*, antibiotics are not effective against infections caused by viruses).

Resistance to antibiotics poses a serious and growing problem, because some infectious diseases are becoming more difficult to treat. Some of the resistant bacteria can be treated with more powerful antibiotics, but there are some infections that do not eliminate even with new antibiotics.